# APPENDIX

# TRANSLATION OF

# FR 2 449 473

**[0001]** The present invention concerns the stirring of a liquid for its homogenisation by a magnetic-driven stirrer system through the wall of a container.

**[0002]** Numerous models of rods exist for magnetic stirrers.

**[0003]** The device of the invention has the advantage of:

1) allowing efficient stirring in containers of relatively large height in relation to their diameter,

2) ensuring efficient stirring without the need for high rotation speeds which have the disadvantage of adding air to the liquid,

3) efficiently mixing liquids of high viscosity; depending upon the viscosity of the liquid to be stirred and the shape of container, the device is produced in several different manners.

**[0004]** The device of the invention is shown in Figures 1 and 3.

**[0005]** In Figure 1 the driving part in moulded plastic material comprises a body 17 which includes a magnetic rod 3 and a driver 1 formed of a rectangular blade which, housed in lumen 8 of element 11, drives the latter in rotation. Body 17, to facilitate rotation, may be provided with two side rings 2 on moulding, or a central ring 12, Figure 2.

**[0006]** The stirrer element 11, Figure 3, is preferably made in a plastic material with a density of less than 1, and reserves 9 may optionally be provided which will assist floating after sealing stoppers 10 by bonding or polyfusion.

**[0007]** Opening 8 is rectangular but of larger size than blade 1 so that it may easily slide over it.

**[0008]** In figures 4 to 7 two variants of stirrer element 11 are shown which may comprise two spiral wings of opposite pitch 14.

**[0009]** For the variant in figures 6 and 7 the stirrer element is formed of a disk provided with stirrer teeth 16.

**[0010]** The plastic parts may be produced using usual machining processes or by plastic moulding.

**[0011]** Overmoulding of the magnet is made before magnetisation or by moulding 2 semi-shells which are subsequently welded by polyfusion or bonding.

FUNCTIONING

**[0012]** When the device is placed in position in the container, the floating stirrer element 11 remains on the surface of the liquid and maintains blade 1 vertical.

**[0013]** When magnetic rod 6 is placed in rotation outside the container, around its axis 7 and by magnetic coupling, body 17 and blade 1 start to rotate at the same angular speed and drive element 11.

**[0014]** Therefore, irrespective of the height of the container, mixing of the liquid is ensured at the bottom and on the surface.

1. Device enabling the stirring and mixing of liquid medium in a very high container through the driving of a floating stirrer by a vertical axial blade along which the floater slides to follow the level of the liquid.

2. Device according to claim 1 characterized in that the floating stirrer may be provided with 2 spiral wings.

3. Device according to claim 2 characterized in that the floating stirrer may be formed of a disk provided with stirrer teeth.